

IN THE CLAIMS

WE CLAIM:

1. A method for gasification of halogen containing remainders and waste materials, comprising the steps of:

obtaining a reactant comprising at least one of halogen containing remainders and a halogen containing waste material having a heat value of greater than 6 MJ/kg;

reacting the reactant and a gasification agent containing free oxygen into a crude gas using a flame reaction at a pressure in excess of ambient pressure to a final temperature of at least 1100° C, the crude gas including carbon monoxide, hydrogen containing gas and halogen/hydrogen containing gas;

contacting the crude gas with a predetermined quantity of water for cooling and saturating the crude gas by evaporation of a part of the predetermined quantity of water with steam; and

absorbing at least one of solid components, liquid components and gaseous components of the crude gas that are soluble in water using a remainder of the predetermined quantity of water that has not been evaporated.

2. The process according to claim 1, wherein the obtaining step includes obtaining a reactant further comprising an additional combustible material.

3. The process according to claim 1, further comprising the step of:

cooling the crude gas having a temperature of at least 1100 ° C indirectly by heat recovery before the contacting step.

4. The process according to claim 3, further comprising the further cooling steps of:

exposing a limited amount of water to the crude gas, wherein the limited amount of water completely evaporates;

performing indirect cooling in a heat exchanger with recovery of one of steam and hot water; and

cooling the crude gas to ambient temperature while absorbing soluble gas components from the crude gas.

5. The process according to claim 3, wherein the contacting step comprises contacting the hot crude gas with at least one of the predetermined quantity of water and a circulating water that has already absorbed the gaseous components of the crude gas.

6. The process according to claim 4, further comprising the step of:

removing entrained solid materials from the water prior to contacting the crude gas with the water.

7. The process according to claim 3, further comprising the step of:  
contacting one of water and a circuit of water already containing gaseous components of the crude gas intensively with the crude gas so as to further absorb the water soluble gaseous compounds from the crude gas.
8. The process according to claim 6, further comprising the further step of:  
processing the water containing the gaseous components removed from the crude gas to obtain valuable materials.
9. The process according to claim 6, comprising the further step of:  
processing a residual gas which is high in CO and H<sub>2</sub> to form one of energy gas and synthesis gas after one of complete and partial removal of components that are soluble in water.
10. The process according to claim 8, further comprising the step of:  
supplying one of liquid, liquid/solid mixture and solid halogen containing remainders and waste materials that are one of soluble and insoluble in one another simultaneously as the reactant to the gasification process in an entrained flow.